91-06870/

AN AEROSPACE STRATEGY FOR BRITISH COLUMBIA

Opportunities
for Aerospace Industry Development
in British Columbia

August 1991

Government of British Columbia

Canadian Cataloguing in Publication Data
Wright, Glen.
An Aerospace strategy for British Columbia

Prepared by Glen Wright.
ISBN 0-7726-1405-5

1. Aerospace industries - British Cloumbia. I. British Columbia. Ministry of Development, Trade and Tourism. II. Title.

HD9711.5.C33B7 1991 338.4'76291'09711 C91-092271-3

Table of Contents

1. EXECUTIVE SUMMARY 1

2. INTRODUCTION 4

3. THE GLOBAL AEROSPACE INDUSTRY 7

4. THE CANADIAN INDUSTRY 9

5. BRITISH COLUMBIA INDUSTRY ASSESSMENT 10

   5.1 General
   5.2 Manufacturing
   5.3 Maintenance and Overhaul and Airframe Modification
   5.4 Space Technologies
   5.5 Human Resources

6. ISSUES AFFECTING BRITISH COLUMBIA AEROSPACE 15

   6.1 Critical Mass and Depth of Capabilities
   6.2 Provincial Government Commitment
   6.3 Collaboration with Federal Government
   6.4 Investment Options

7. RECOMMENDATIONS 19

Printed on recycled paper

1. EXECUTIVE SUMMARY

This aerospace strategy has been prepared at the direction of the Premier's Economic Advisory Council, in consultation with the British Columbia aerospace industry and ministries and agencies of the Government of British Columbia to provide a framework for the development of the aerospace industry in British Columbia.

The aerospace industry consists of a number of segments each with varying opportunities for investment and growth. The strategy identifies particular segments for British Columbia to pursue and provides a structure for focusing energies and resources to achieve specific objectives over the next five years.

The Canadian aerospace manufacturing industry is centred in Ontario, Quebec and, to a lesser extent, Manitoba. It consists of four functional segments: airframe, propulsion, avionics and space. These in turn fall into three basic tiers: large prime contractors, subassembly manufacturers and component manufacturers. British Columbia firms have developed special expertise in the subassembly and component manufacturing tiers.

The industry is supported by federal government policies and programs which include direct funding, military procurement, industrial offsets and the maintenance of a supportive infrastructure. While there have been efforts in recent years to direct support to regions outside central Canada, federal support to establish Montreal as an aerospace centre for Canada has reinforced historical trends.

British Columbia accounts for only 1.4 per cent of Canadian aerospace industry shipments as reported to the Aerospace Industries Association of Canada. Although it enjoys a favourable location relative to aerospace manufacturing centres of the United States and air traffic patterns to the Pacific Rim, the province has not been traditionally considered an aerospace centre.

While aviation has grown rapidly in British Columbia in recent years, the manufacturing and service sectors have experienced low growth compared to other regions. Reasons include: few proprietary products; a preponderance of thinly capitalized, privately held firms; and a lack of basic support services required by the industry.

Nevertheless, the existing industry in British Columbia has a broad range of capabilities and has achieved major success in certain international niche markets. Local firms produce subassemblies and components for major prime contractors; conduct repair, overhaul and modification of airframes and engines for fixed and rotary wing aircraft; and participate in the Canadian Space Program.

Major global trends influencing the options available to British Columbia in aerospace are: the concentration of the commercial manufacturing industry; increasingly fierce competition favouring large established companies; the decline in military budgets; the need for suppliers to share financial and technical risks of aircraft manufacturers; the aging of the world airline fleets; and the backlog of new aircraft orders.

The consequences of these global trends are: an increasing worldwide demand for maintenance and overhaul facilities; a shortage of skilled aerospace workers; shortages of original equipment parts for older aircraft; and limited opportunities to establish new manufacturing capacity outside established areas of concentration.

Development of an aerospace industry in British Columbia will require an increased stock of skilled aerospace workers. While short-term needs can be addressed through out-of-province recruiting, including offshore immigration, long-term requirements must be supplied through training provided by post-secondary educational institutions complemented by workplace training.

Other issues affecting the development of an aerospace industry include:

- the need for an industry critical mass to establish infrastructure, exploit synergy and promote growth;

- the need to secure federal and provincial government commitments to assist the industry;

- investment options to reflect global trends and provincial capabilities, including:
  - worldwide demand for airframe repair and overhaul of aging and expanding airline fleets;
  - maintenance and repair requirements for the latest generation of jet engines;

- fierce competition around the world for aerospace manufacturing investment;
- existing provincial capability in repair, overhaul and modification of aircraft;
- the provincial infrastructure of post-secondary institutions to provide skilled workers;
- the existing base of companies capable of providing some of the manufacturing support services required by the industry; and
- apprenticeship programs and other forms of workplace-based training.

Opportunities exist for new entrants and for growth and diversification of British Columbia companies. The strategy recommended for British Columbia is to foster that segment of the aerospace industry which concentrates on support, service and training for the aviation industry and which specializes in manufactured components for niche markets around the world.

The following initiatives form the framework for an aerospace sector strategy:

1. nurture the growth of existing British Columbia-based companies;

2. target the establishment and development of the service and support segments of the industry: in particular, the maintenance and overhaul of commercial aircraft and jet engines; and

3. enhance the size and the skills of the aerospace workforce in the province.

Assistance to promote British Columbia-based industry can be provided on both industry-wide and individual company bases using federal and provincial programs in a co-ordinated and focused manner. Major investment opportunities in maintenance and overhaul capability will be examined on a case-by-case basis. Initiatives to increase the available workforce will be required to support the existing industry and to attract new entrants into the province.

2. INTRODUCTION

At the direction of the Premier's Economic Advisory Council, and in consultation with the Aerospace Industries Committee of the British Columbia Aviation Council and responsible agencies and ministries, the province has evaluated the options, strategies and opportunities to promote the development of the aerospace industry in British Columbia. This strategy is the result.

In preparing the strategy, the following actions were taken:

- Consultations were held with the Aerospace Industries Committee of the British Columbia Aviation Council to obtain their advice and concurrence with the plan.
- A planning forum with industry leaders from Canada and the United States was organized to prioritize specific areas of opportunity for British Columbia.
- Interviews were conducted with major aerospace companies based in British Columbia to determine issues affecting business and requirements to expand.
- An inter-ministry committee on aerospace was formed to review and co-ordinate issues and strategies within government.
- A task force on international aerospace issues was created.

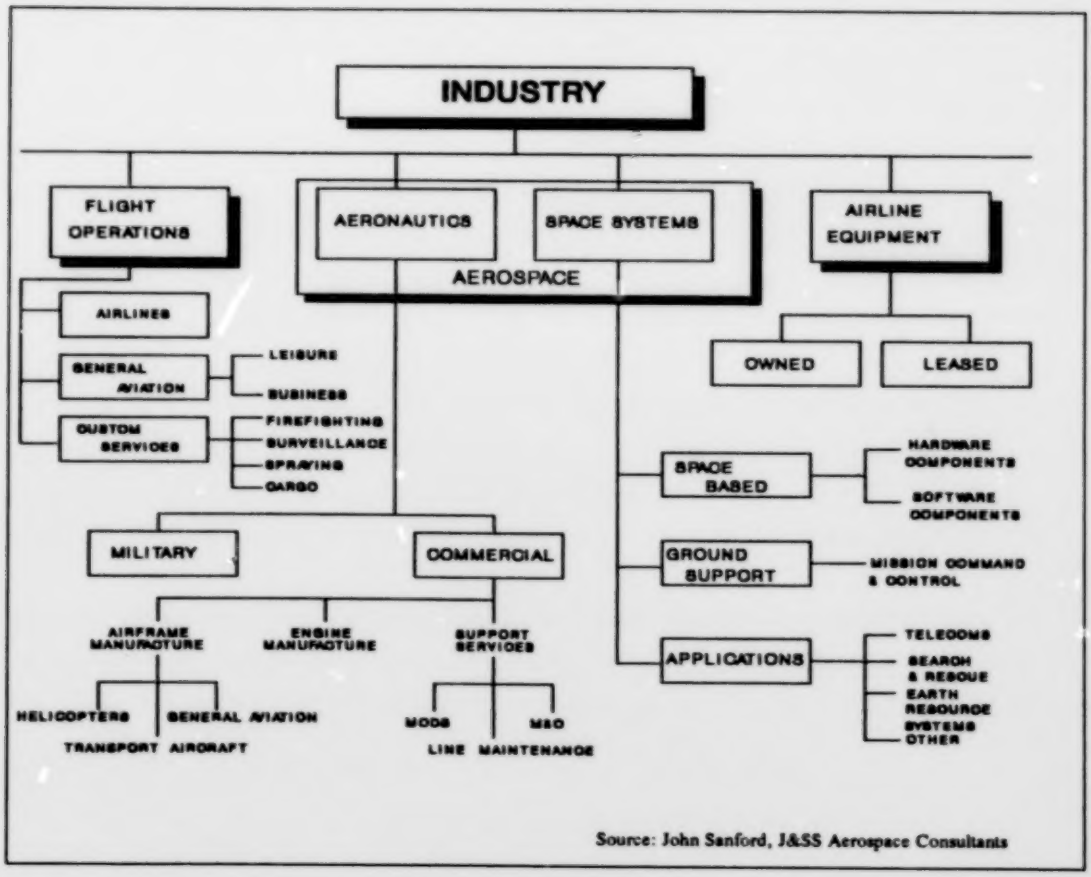
Concurrent provincial government activities also provided input for the development of this strategy. These included: co-ordination with the federal government to facilitate the recruitment of foreign workers to meet skill shortages of British Columbia aerospace firms; prospecting for offshore aerospace investments; trade missions to key foreign markets; and the development of human resource plans including training proposals to address the aerospace industry's long-term needs for skilled workers.

Options, strategies and initiatives for industry development have been evaluated in light of changing circumstances within the industry and international markets. This has included an examination of British Columbia's competitive advantages, the types of activities which realistically can be attracted to the province, and the policy and strategy options available to government.

For some years the government of British Columbia has viewed aerospace as a key sector to serve the goals of economic diversification. A small but enthusiastic local industry and the province's proximity to the western United States aerospace industrial complex have contributed to this interest.

Aerospace contains a number of elements which make it attractive for economic development. More than any other sector it combines characteristics of high value manufacturing and high technology research and development. The industry uses highly skilled labour and results in substantial spin-off activity for the local economy.

As illustrated below, the industry comprises a number of different segments. Opportunities for investment and growth vary considerably across these segments. A successful economic development strategy requires targeting specific sectors and the related infrastructures rather than the total industry.



Source: John Sanford, J&SS Aerospace Consultants

With a basic infrastructure, aerospace, unlike other industrial sectors, can grow in large quantum steps with one or two major investments. A major facility can create a cornerstone for high-level industrial activity and provide the necessary critical mass for future development. Aerospace can also be a major contributor and catalyst for technology development, industrial diversification and economic enrichment.

To date, British Columbia has used a broad and ad hoc approach for attracting major aerospace investment to the province. Success has been limited. There has yet to be a significant investment to furnish the critical mass which would allow long-term development.

Compared to other jurisdictions in North America, British Columbia does not have any serious competitive disadvantages that would discourage aerospace investment. Our competitive advantages -- location on the Pacific Rim, proximity to Boeing, established base of companies, attractive investment climate and educational infrastructure -- are modest in scope and somewhat intangible. They do, however, form the basis upon which the province's aerospace strategy can be built.

This strategy provides a framework for establishing clear objectives and concentrating energies and resources of the province for a minimum of five years.

Objectives of the strategy are:

- to facilitate growth of the existing industry;
- to attract new investment;
- to assist with market development;
- to enhance technology development;
- to promote skills development and diversification; and
- to develop infrastructure.

The strategy is based on an assessment of British Columbian, Canadian and global aerospace industries and trends. It proposes a vision for aerospace industry development in British Columbia and identifies initiatives to make this vision a reality.

3. THE GLOBAL AEROSPACE INDUSTRY

Aerospace refers to two distinct but related industry sectors: aeronautics and space. These sectors have independent structures, technologies and dynamics.

Aeronautics includes the design, manufacture, marketing and maintenance of airframes, engines and avionics systems. The air transport industry and government, particularly the military, are the sector's two primary customers.

Space includes space vehicles, launch and ground control and space-based applications. Governments are the sector's primary customers. Unlike the United States, Britain and France, where individual firms operate in both sectors, Canadian companies tend to be focused exclusively on either space or aeronautics. Nevertheless, manufacturing technologies, along with systems design and engineering capabilities, are largely transferrable between them.

Key trends which are influencing the direction of the global aeronautics industry and the options available to British Columbia are:

- the increasing concentration of the commercial manufacturing industry;
- the down-sizing of military budgets;
- the sharing of financial and technical risk by aircraft manufacturers and their suppliers;
- the aging of world airline fleets; and
- the backlog of new aircraft orders.

Aerospace manufacturing covers a broad range of technical disciplines including light and heavy manufacturing, electronics, software and composite materials. Being labour- and capital-intensive, it is highly concentrated with formidable barriers to new entrants.

Three companies dominate the commercial segment of the industry: Boeing, McDonnell Douglas, and Airbus Industry, a European consortium of governments and industry. The military segment, while less concentrated, is similarly dominated by very large firms and is strongly influenced by the political environment.

The military has accounted for the greatest proportion of aerospace industry sales for the last 40 years. Declining military budgets will create excess manufacturing capacity in the United States and around the world. Military contractors, with excess capacity resulting from programs that are winding down, and local governments wanting to preserve jobs and facilities in their regions, are shifting focus and competing aggressively for commercial business opportunities.

While still dominated by the United States, the aerospace market is becoming increasingly international. The huge capital investments and research efforts inherent in aerospace programs, are forcing United States and European manufacturers into partnerships to share in the technical and financial risks. For example, Boeing and Japanese manufacturers are collaborating to produce the next generation of commercial jetliners; Airbus Industry created a European-based competitor to Boeing and McDonnell Douglas; and Canadair, with extensive financial assistance from Canadian and Quebec governments, is manufacturing subassemblies for the Airbus.

Traffic growth and expanding route systems are causing older aircraft to remain in service for a longer period of time. The US Federal Aviation Agency has instituted a mandatory aging aircraft program to upgrade older aircraft. In response, airlines and third-party suppliers are expanding and establishing new capacities for maintenance and overhaul.

The boom in commercial aviation has created a backlog of orders for new aircraft which will last for the rest of the decade. It has also created an increasing demand for facilities to carry out major maintenance and overhaul on both new aircraft and the aging fleets of the world's airlines.

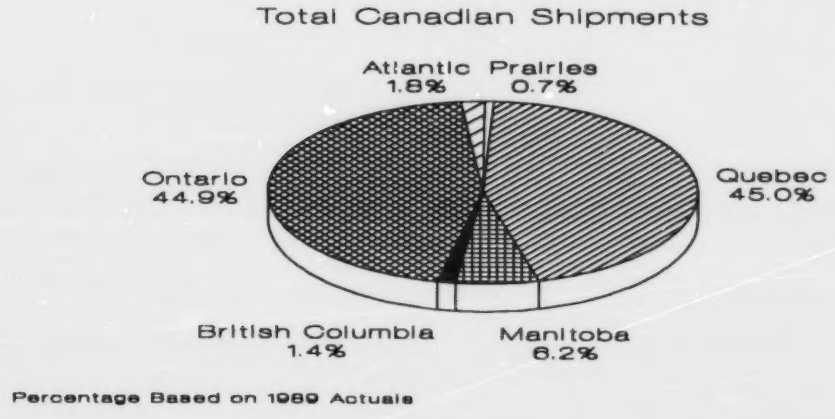
The chief consequences of these global trends include:

- a growing unsatisfied market for maintenance and overhaul of older aircraft which will result in significant capital investments to expand existing facilities and establish new ones;
- a universal concern that there are not enough trained and experienced mechanics available to do the work;

- a shortage of original equipment parts for older aircraft caused by the manufacturers' concentration on new aircraft programs;
- limited opportunities for attracting new manufacturing capacity outside the traditional geographic centres of concentration.

4. THE CANADIAN INDUSTRY

The Canadian industry is strong and sizeable. With shipments approaching $9 billion, the industry is export-oriented and diversified in its capabilities and markets. Its primary customers are the U.S. military and civilian markets. It is technology-intensive and contains specialized expertise in a number of niche applications.



Source: Aerospace Industries Association of Canada

The industry consists of four functional segments: airframe, propulsion, avionics, and space. Each segment has three basic categories or tiers: large proprietary prime contractors such as Pratt and Whitney and Canadair; medium-sized manufacturing and repair and overhaul firms which are generally subcontractors of the larger primes; and small machine shops and component-makers which supply short-term and low-volume orders to the larger firms. Canadian proprietary products are mainly found within the avionics and space segments. Most companies outside Ontario and Quebec, including all British Columbian companies, fall within

the second and third tiers.

The development of aerospace in Canada has been strongly influenced by federal policies and initiatives in several areas. These have included:

- direct funding to industry for source establishment and research and development;
- offsets and regional distribution requirements tied to major government procurements from international suppliers;
- direct military procurements; and
- supportive infrastructure for the industry such as the Canadian Commercial Corporation and the Defence Sharing Program with the United States.

Concentrated in Ontario and Quebec, with a smaller but significant segment centred around Winnipeg, Manitoba, the bulk of the federal support for the Canadian aerospace industry has been directed to these regions. While the federal government has tried in recent years to direct its support more evenly across the country, its efforts to make Montreal the centre for the transport industry and to strengthen Montreal's role as an aerospace centre reinforce the historic bias which has developed.

5. BRITISH COLUMBIA INDUSTRY ASSESSMENT

5.1 General

British Columbia has not been traditionally an aerospace centre. While enjoying a favourable location on the Pacific Rim and proximity to the U.S. west coast aerospace industry complex, a lack of infrastructure and a shortage of skilled labour have inhibited industry growth.

According to the most recent figures available from the Aerospace Industries Association of Canada, their thirteen British Columbia based members account for 1.4 per cent of total Canadian aerospace production.

The total sales in 1990, of 60 British Columbia based producers of systems, components, and subassemblies and third party maintenance, overhaul, repair and engineering services are estimated at $320 million. Five firms account for two-thirds of

this total.

While small by industry standards and concentrated in the second and third tiers of the industry, these firms are world leaders in their areas of expertise.

The aviation and aeronautics industries in British Columbia consist of one major integrated airline; a group of smaller regional airlines; a collection of small second- and third-tier firms; helicopter operators, parts manufacturers and service companies; and aircraft service companies doing major and minor modifications, repairs and overhauls. In recent years there has been rapid growth in aviation and aviation services in British Columbia. In contrast, aeronautics manufacturing and support services have experienced low growth.

The existing industry has remained small for a number of reasons:

- few proprietary products;
- a preponderance of privately held firms typically short of capital for expansion; and
- limited supply of basic processing services, such as plating, anodizing, shotpeening, heat treating and stress relieving.

Nevertheless, the industry has developed special areas of expertise and carved out a modest range of niche markets. These firms have created a thriving but modest local industry. The diversity and size of the niches, however, has made it difficult for infrastructure or critical mass to develop.

5.2 Manufacturing

Two second-tier companies, Canadian Aircraft Products Ltd. and EBCO Aerospace, form the backbone of the manufacturing sector. While small by national standards, both firms are now developing new and aggressive business plans to acquire new capabilities and become firmly established as major aerospace firms.

There are approximately ten third-tier firms manufacturing precision-machined components. Aerospace tends to be incremental to their main line of business. They have difficulty maintaining all the procedures and processes required by the aerospace industry. Their ability to bid on aircraft programs is restricted.

The bulk of the business of British Columbia manufacturers comes from eastern-based Canadian companies including Boeing (Canada), McDonnell Douglas (Canada) and Canadair. Currently, British Columbia sales to Boeing in Seattle or McDonnell Douglas in Long Beach are modest. British Columbia companies have limited financial resources to cover non-recurring-costs required to participate in major aircraft programs of United States-based primes.

Local support mechanisms and manufacturing support services required to sustain an aerospace infrastructure are few.

Components manufactured in British Columbia must be sent out-of-province for processes such as shotpeening and anodizing. This adds cost and time, making many British Columbia products less competitive.

5.3 Maintenance and Overhaul and Airframe Modification

British Columbia has developed niche capabilities for maintenance, overhaul and refurbishing of rotary- and fixed-wing aircraft and engines. Firms such as AR Technologies, Innotech Aviation and Canadian Helicopters of Richmond, Conair of Abbotsford and Kelowna Flightcraft of Kelowna are leaders in their fields.

These companies have developed unique capabilities for repair and maintenance of specific aircraft. They have also gained expertise in the modification of aircraft for niche applications. For example, Conair is a supplier of specialized firefighting aircraft and Kelowna Flightcraft overhauls Boeing 727 aircraft and structurally modifies Convair aircraft for cargo applications.

The major constraint on this segment of the industry is the supply of skilled labour. Companies have approached both the federal and provincial governments seeking solutions to the problem. A potential short-term solution is recruiting from offshore. In the long term, however, it will be necessary to improve the workforce available through graduation from technical institutions and industry-based training programs.

5.4 Space Technologies

The province's space industry has developed capabilities in remote sensing, electronics/software systems, communications equipment and mechanical components.

In general, space programs in Canada are directed and managed by the Canadian Space Agency, which determines the programs Canada will undertake, both nationally and internationally.

Participation by British Columbia firms in federal programs such as Radarsat, the Space Station and the EHF Satellite program have made them leaders in their field and provided a vehicle to acquire technology and upgrade capabilities. The space program and the application technologies related to it have been instrumental in the establishment and viability of a number of local advanced technology firms, notably, MacDonald Dettwiler and Associates Ltd. and MPR Teltech Ltd.

The British Columbia government actively assists local firms to obtain equitable access to federal government space programs and to upgrade their capabilities to participate.

As many of the technologies and capabilities associated with the space programs are applicable to other manufacturing, the continued development of the space sector will be linked to the structural development of aerospace and high-technology industry in British Columbia .

5.5 Human Resources

Development of an aerospace industry requires skilled and qualified engineers, technicians and tradespeople. Canada has always had a shortage of skilled aerospace workers. The traditional solution has been to recruit skilled journeymen from abroad, especially Europe.

While this has become increasingly difficult due to better working conditions abroad, worldwide competition and more-restrictive immigration policies in

Canada, opportunities continue to exist to attract limited numbers of skilled workers from offshore.

Currently the province assists companies in British Columbia on a case-by-case basis to expedite recruiting and processing of skilled workers from offshore by direct negotiations with Canadian Employment and Immigration offices at home and abroad. This process will be improved following implementation of a new federal-provincial immigration agreement.

Immigration cannot meet industry's long-term demands, however, and must be viewed as a stop-gap measure. A long-term solution to the problem can only be fully addressed through the education system and training initiatives of established companies.

British Columbia's post-secondary educational institutions have a demonstrated capability to provide training in aerospace disciplines.

The British Columbia Institute of Technology (BCIT) is viewed as having one of the top aerospace training programs in the country. Along with Northern Lights College in Dawson Creek, these two institutes currently graduate 180 students per year.

A detailed labour market study funded by the Asia Pacific Initiative (API) in 1989, predicts a greater demand for aerospace workers than can currently be met. Furthermore, one-third of the existing workforce is over the age of 45. As retirements increase, a further strain will be placed on the supply of skilled workers.

In response to API recommendations, a proposal for an Aerospace Training Network to address present and future training requirement for skilled aerospace workers is being considered by the province. This network would be centred on BCIT and involve a number of the regional colleges.

This college-and-institute partnership is intended not only to meet the demands of existing companies for skilled workers but also to act as a magnet for additional investment.

In addition to immigration and training at post-secondary institutions, efforts by the aerospace industry itself to attract and retain workers through in-house programs are viewed as necessary.

6. ISSUES AFFECTING BRITISH COLUMBIA AEROSPACE

6.1 Critical Mass and Depth of Capabilities

While British Columbia is a small player, its aerospace sector has diverse capabilities in both fixed-wing and helicopter markets including: component manufacturing, maintenance, overhaul, refurbishing and airframe modification. However, the industry lacks critical mass and depth, which characterize a viable and growing industry. To move beyond its current stage of development, the industry requires: dramatic growth by established companies; new world competitive entrants; investment in manufacturing infrastructure; the enhancement of skills; and adoption of innovative marketing techniques.

6.2 Provincial Government Commitment

Development of an aerospace industry requires considerable and active support and encouragement of government. Other provinces in Canada and international jurisdictions have specifically targeted assistance for their aerospace industries with considerable success. Internationally, the governments of the European Community, Korea and Singapore have provided substantial political, financial and market support to the development of national aerospace industries. In Canada, Quebec has been particularly effective in influencing federal government policies towards strengthening and diversifying its aerospace industry.

The establishment of new aerospace businesses and continued growth require large expenditures for capital, product development and the maintenance of a support infrastructure. With federal policies presently focused on other regions

of Canada, the government of British Columbia will need to assume a greater role in:

- assisting companies to promote themselves, identify and pursue opportunities and win contracts;
- attracting new aerospace investment;
- assisting in the development of human resource plans and training proposals from industry and post-secondary institutions;
- assisting companies with long-term risk financing for new products and technology development;
- broadening the base of industry infrastructure; and
- addressing specific impediments to industry growth and diversification;
- complementing federal government financial assistance programs for new industry creation.

Responsibility for these tasks is distributed among a number of government ministries and agencies. The variety of industry interests and capabilities and the network of government responsibilities necessitate close and regular consultation between government and industry.

6.3 Collaboration with the Federal Government

Federal policy and program support will be needed to implement the British Columbia aerospace sector development plan. Federal financial support programs, procurements, industrial offsets and regional distribution initiatives are essential for promoting capital expansion and enhancing capabilities and technology.

Collaboration with federal authorities responsible for training programs and initiatives, will be essential.

Increased co-operation will be needed to ensure provincial input to national aerospace policy development and to enhance access to federal programs and projects.

6.4 Investment Priorities

Global trends and the current capacity of the British Columbia industry create the following opportunities to develop a viable aerospace sector in the province:

- **Airframe and Aircraft Engine Repair and Overhaul**

  The demand for major modification and overhaul facilities for aging and new aircraft will exceed current worldwide capacity for the foreseeable future. Similarly, markets for large jet engine repair and overhaul are strong.

  There are no technical barriers to locating such facilities in British Columbia. The province's infrastructure of airports, its location within existing air traffic patterns, access to investment capital and ability to produce and retain a skilled workforce are competitive advantages.

  However, to attract this type of investment provincial and federal governments must be prepared to consider the type of backing and financial support provided by competing jurisdictions like Australia, Mexico, the United States, Ireland and Indonesia.

- **Training**

  British Columbia's post-secondary institution infrastructure can be instrumental in attracting new aerospace industry by addressing the skill shortage in the industry and becoming an internationally recognized source of skilled workers.

- **Specialty Repair and Overhaul**

  British Columbia has extensive capabilities in maintenance and overhaul of fixed- and rotary-wing aircraft. Opportunities exist for repair shops and second-tier subcontractors to expand their capabilities to handle an expected surge in business being created by the aging of world airline fleets.

- **Infrastructure Support Services**

  Enhanced infrastructure services is required both to meet the needs of the existing base of aerospace firms and to create a more attractive environment for additional aerospace investment.

  Some of the structural support issues to be addressed are summarized as follows:

Company and Project Financing	Offshore investment prospects, non-recurring costs, general business financing, risk-sharing with major prime contractors.
Human Resources	Immigration, training programs, post-secondary institution support, industry-supported programs.
Manufacturing Services	CAD/CAM, manufacturing processes (e.g., plating, non-destructive testing [NDT], painting, stress relieving, pickling, shotpeening, heat treating, anodizing), calibration lab, quality assurance.
Technology Acquisition and Enhancement	Government procurement, technology transfer, in-house research and development.
Marketing	Market segment strategies, teaming arrangements, joint ventures, bid response and preparation, international marketing.
Other	Tax policies, industrial land, government/industry collaboration, individual company issues.

- **Major Manufacturing**
  Existing competition from various jurisdictions including the over-capacity of aerospace production facilities in North America militates against British Columbia attracting investment by a major prime contractor. Efforts to attract new manufacturing investment should focus on filling the gaps in the existing manufacturing infrastructure and assisting the growth of established British Columbia companies.

- **Space**
  There is likely to be a modest increase in the Canadian and United States space budgets over the next few years, providing ongoing business for British Columbia firms as well as access to new and developing technologies. Opportunities and needs will arise for nurturing and assisting established British Columbia companies to exploit these opportunities.

7. RECOMMENDATIONS

In comparison with other jurisdictions in Canada and around the world, the British Columbia aerospace sector is embryonic. Opportunities exist for growth and diversification but, given the maturity and competitiveness of existing international players, British Columbia companies must carve out new and unique niches in order to flourish. As a result, a strategy appropriate for the development of aerospace in British Columbia is:

> To foster the growth and development of a highly competent and skilled aerospace industry which concentrates on the support, service and training segments of the aviation industry and specialized manufactured systems and components for niche markets around the world.

Global trends and the structural and economic environment of the aerospace industry in British Columbia suggest that the province pursue the following three initiatives as a framework within which to develop the aerospace industry:

A. NURTURE THE GROWTH OF EXISTING BRITISH COLUMBIA-BASED COMPANIES

Objective:

To create the critical mass and synergy needed for a self sustaining industry by:

1. assisting individual companies to meet their growth and diversification objectives for the next five years;

2. ensuring that government initiatives and programs reflect the needs and priorities of the industry; and

3. identifying and remedying the constraints and structural issues hindering industry growth.

Action:

1. Develop, in consultation with the industry, education institutions and other federal and provincial government agencies, a detailed plan specifying targets to be achieved and projects and initiatives to be carried out over the next five years which promote the growth and expansion of the local aerospace industry.

2. Establish a formal mechanism for consultation between government and industry on issues and priorities affecting industry development in the province.

3. Examine existing programs (financial assistance, immigration, education and training, research and development, international marketing, taxation, etc.) to determine their applicability to the requirements of the aerospace industry.

B. TARGET THE ESTABLISHMENT AND DEVELOPMENT OF THE SERVICE AND SUPPORT SEGMENTS OF THE INDUSTRY: IN PARTICULAR, THE MAINTENANCE AND OVERHAUL OF COMMERCIAL AIRCRAFT AND JET ENGINES

Objective:

To establish British Columbia as a centre for maintenance and overhaul of a broad range of aircraft equipment and components with the requisite skills, support facilities and reputation.

Action:

1. Pursue investment opportunities for an airframe maintenance and overhaul facility.

2. Pursue opportunities for an engine repair and overhaul facility.

3. Develop additional structural and investment initiatives which support the expansion of the aerospace service sector in British Columbia.

C. ENHANCE THE SIZE AND THE SKILLS OF THE AEROSPACE WORKFORCE IN THE PROVINCE

Objective:

To ensure that the pool of workers available to the aerospace sector in British Columbia is of sufficient size, diversity and level of skills to meet the requirements of the local industry and to act as a magnet to attract and sustain new investment.

The availability of a skilled labour pool is critical to sustaining growth of the aerospace sector. Education programs and immigration must be complemented by programs within the aerospace industry itself to develop and retain skilled workers. Skilled tradespeople are currently in strong demand by the existing industry. This will increase significantly with any new investment into the province.

Action:

1. Review proposals such as the Aerospace Training Network that are intended to enhance the skilled workforce.

2. Develop with the federal government a comprehensive strategy tailored to skill shortages of the aerospace sector.

3. Form an industry-led co-ordinating group with participation from unions, associations, institutes and governments to provide leadership in the long and short-term training requirements of the province as recommended by the Asia Pacific Initiative "Labour Market Study of the British Columbia Aerospace Industry".

4. Encourage the aerospace industry to review its policies and practices with respect to attracting and retaining skilled workers.